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TRAVERSE TABLE FOR TRANSIT BOOK.

From 1° to 90° for a distance of 100.

Degrees	DEGREES.		¼ DEGREE.		½ DEGREE.		¾ DEGREE.		Degrees.
	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	
0			100.00	0.44	100.00	0.87	99.99	1.31	89
1	99.98	1.75	99.98	2.18	99.97	2.62	99.95	3.05	88
2	99.94	3.49	99.92	3.93	99.91	4.36	99.88	4.80	87
3	99.86	5.23	99.84	5.67	99.81	6.10	99.79	6.54	86
4	99.76	6.98	99.73	7.41	99.69	7.85	99.66	8.28	85
5	99.62	8.72	99.58	9.15	99.54	9.58	99.50	10.02	84
6	99.45	10.45	99.41	10.89	99.36	11.32	99.31	11.75	83
7	99.25	12.19	99.20	12.62	99.14	13.05	99.09	13.49	82
8	99.03	13.92	98.97	14.35	98.90	14.78	98.84	15.21	81
9	98.77	15.64	98.70	16.07	98.63	16.50	98.56	16.93	80
10	98.48	17.36	98.40	17.79	98.33	18.22	98.25	18.65	79
11	98.16	19.08	98.08	19.51	97.99	19.94	97.90	20.36	78
12	97.81	20.79	97.72	21.22	97.63	21.64	97.53	22.07	77
13	97.44	22.50	97.34	22.92	97.24	23.34	97.13	23.77	76
14	97.03	24.19	96.92	24.62	96.81	25.04	96.70	25.46	75
15	96.59	25.88	96.48	26.30	96.36	26.72	96.25	27.14	74
16	96.13	27.56	96.00	27.98	95.88	28.40	95.76	28.82	73
17	95.63	29.24	95.50	29.65	95.37	30.07	95.24	30.49	72
18	95.11	30.90	94.97	31.32	94.83	31.73	94.69	32.14	71
19	94.55	32.56	94.41	32.97	94.26	33.38	94.12	33.79	70
20	93.97	34.20	93.82	34.61	93.67	35.02	93.51	35.43	69
21	93.36	35.84	93.20	36.24	93.04	36.65	92.88	37.06	68
22	92.72	37.46	92.55	37.86	92.39	38.27	92.22	38.67	67
23	92.05	39.07	91.88	39.47	91.71	39.87	91.53	40.27	66
24	91.35	40.67	91.18	41.07	91.00	41.47	90.81	41.87	65
25	90.63	42.26	90.45	42.66	90.26	43.05	90.07	43.44	64
26	89.88	43.84	89.69	44.23	89.49	44.62	89.30	45.01	63
27	89.10	45.40	88.90	45.79	88.70	46.17	88.50	46.56	62
28	88.29	46.95	88.09	47.33	87.88	47.72	87.67	48.10	61
29	87.46	48.48	87.25	48.86	87.04	49.24	86.82	49.62	60
30	86.60	50.00	86.38	50.38	86.16	50.75	85.94	51.13	59
31	85.72	51.50	85.49	51.88	85.26	52.25	85.04	52.62	58
32	84.80	52.99	84.57	53.36	84.34	53.73	84.10	54.10	57
33	83.87	54.46	83.63	54.83	83.39	55.19	83.15	55.56	56
34	82.90	55.92	82.66	56.28	82.41	56.64	82.16	57.00	55
35	81.92	57.36	81.66	57.71	81.41	58.07	81.16	58.42	54
36	80.90	58.78	80.64	59.13	80.39	59.48	80.13	59.83	53
37	79.86	60.18	79.60	60.53	79.34	60.88	79.07	61.32	52
38	78.80	61.57	78.53	61.91	78.26	62.25	77.99	62.59	51
39	77.71	62.93	77.44	63.27	77.16	63.61	76.88	63.94	50
40	76.60	64.28	76.32	64.61	76.04	64.94	75.76	65.28	49
41	75.47	65.61	75.18	65.93	74.90	66.26	74.61	66.59	48
42	74.31	66.91	74.02	67.24	73.73	67.56	73.43	67.88	47
43	73.14	68.20	72.84	68.52	72.54	68.84	72.24	69.15	46
44	71.93	69.47	71.63	69.78	71.33	70.09	71.02	70.40	45
45	70.71	70.71							
Degrees.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Degrees.
	DEGREES.		¾ DEGREE.		½ DEGREE.		¼ DEGREE.		

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Degrees

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45

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See Book #20 for Contents of this Book.

F.D. Balch
Inspector.

Report No. 1 & 1A J. H. Beach's
Bored to comply with Right of
Sacramento Southern R.R.

Depth	Character of Soil	Thickness	Remarks
0.0			
	Rich Alluvial Soil	12.0	Medium 11/21
12.0			Struck
	Fine Sand.	15.0	
27.0			
	Blue Clay	18.0	Hard 11/22
45.0			
	Gravel	1.0	Hard 11/23
46.0			

Well not finished on account of not
until we receive more tools.

46.0			
	Sand	3.0	Soft.
49.0			
	Blue Clay	12.0	Hard.
61.0			
	Sand.		Soft

Well 61 ft deep
12.5 ft. to water.

Well. 5"
Way Conditions.
Sacramento to Walnut Grove.

Remarks.	Starter	Perforated	Joints	Total No. Feet	Solder Pounds	Rivets	Acid	Charcoal	Date	Time Hours
Bored 15 ft. water at 12 ft.	x								11/21	7
Bored 44 ft. Cased 16 Joints.	x	1	2	14	3	0	5		11/22	9
Bored 46 ft Cased 23 Joints	x			7	4	3	3	5	1/2 Sack 11/23	7

being able to force casing down

Cased 27 Joints Bored 50 ft.	x			4	5	0	7			12/21 9
Cased Joints Bored 61 ft.	x									12/22 4
Totals		1	2	25	50	7	3	125	.20 1/2 Sk	4 days
Above Surface					1.5					
Below "					49.2					

0004

Report No 1 — J.S. Contents

I Bored to comply with Right of Way Conditions. Well. 5

Sacramento Southern R.R. — Sacramento to Walnut Grove

Depth	Character of Soil	Thickness	Remarks	Starter Size	Perforated Pipe Feet	Joints Pipe	Total No feet	Solder Pounds	Rivets	Acid	Charcoal	Date	Time Hours
0.0													
	Alluvial Soil	5.0	Medium										
5.0													
	Fine Sand.	19.0	11/23									11/23	2
24.0			Struck										
	Bored 11 ft. water at 11 ft.												
	Bored 27 ft Cased 15 Joints				1	2	13					11/24	9
	Blue Clay	13.0	Medium 11/24										
37.0													
	" "	20.0	Hard 11/25			6						11/25	9
57.0													
	" "	10.0	" 11/27			1						11/27	6
67.0													
	Totals	67.0			1	2	20	414	5	100	1/2 Sack		2 8/9 days

Casing above ground to allow for raising of ground 3.4

Casing below ground 38.0

Water 10' below surface of ground.

0005

M. T. Hunt's
Bored to comply with
Sacramento Southern R.R.

Depth	Character of Soil	Thickness	Rem
0.0			
	Rich Alluvial Soil	5.0	Medium
5.0			
	Blue Clay	11.0	"
16.0			Struck
	Sand	29.0	Soft.
45.0			
	Blue Clay	0.5	Hard
45.5			
	Sand	3.5	Soft.
49.0			
	Blue Clay	31.0	Hard
80.0			
	Totals		

Depth of well 80'
" to water 85'

-(Well not finished 12/5/05
Finished 12/5/05)

Well. 6"
Right of Way Conditions. Report No 2 and 2A
Sacramento to Walnut Grove.

Remarks	Starters 2"	Perforated 1 sq in	Joints 1 sq in	Total No Feet	Lbs Solder	Rivets	Acid	Charcoal	Date	Time Hours	Hours
	x										
11/27 Bored 17 ft. Water at 13 ft.	x								11/27	3	
11/28 Bored 30 ft Cased 16 Joints	1	2	14	30.3					11/28	9	
12/1 Bored 44 ft Cased 22 Joints			6	41.4					12/1	9	
12/2 Bored 64 ft. Cased 27 Joints			5	50.7					12/2	9	
Bored 80 ft 12/5									12/5	4	
	1	2	25	50.7	5	125#	10	4/4 Sack		34	
Casing above surface				1.5							
" Below				49.2							

0006

Report No 3. Sacramento to Sacramento
Wells Bored to comply with Right of War Conditions
and 3A. 6" Well for N. D. Hack

Southern R R
Walnut Grove
Week Ending 11/27 to 12/5 inc

4

Depth	Character of Soil.	Thickness	Remarks.	Strainers	Perforated Jts	Joints 18ft	Total No Feet	Lbs Solder	Rivets	Acid	Charcoal	Date	Time Hours
0.0				x									
	Rich Alluvial Soil	8	Medium										
8.0													
	Fine Sand	6	Soft	x									
14.0			Struck									12/5	5
	Fine Blue Sand	8	Soft										
22.0													
	Blue Clay	64.0	Hard										
86.0		~~64.0~~											
	10 ft to water												

Water at 13'
Bored 21 ft 12/6 — Cased 13 Joints — 1 2 11 248 — 12/6 9
Cased 20 Joints 12/7 — Bored 40 ft — 7 377 — 12/7 9
Bored 66 ft 12/8 — 12/8 9
" 80 ft 12/9 — 12/9 9
" 86 ft 12/11 — 2 414 — 12/11 4

Totals	1	2	20	414	5	100	#10	½ Sack			45 hrs or 5 days
Above Surface			5									
Below "			36.4									

0007

Report No 4 W.E.L L.S.

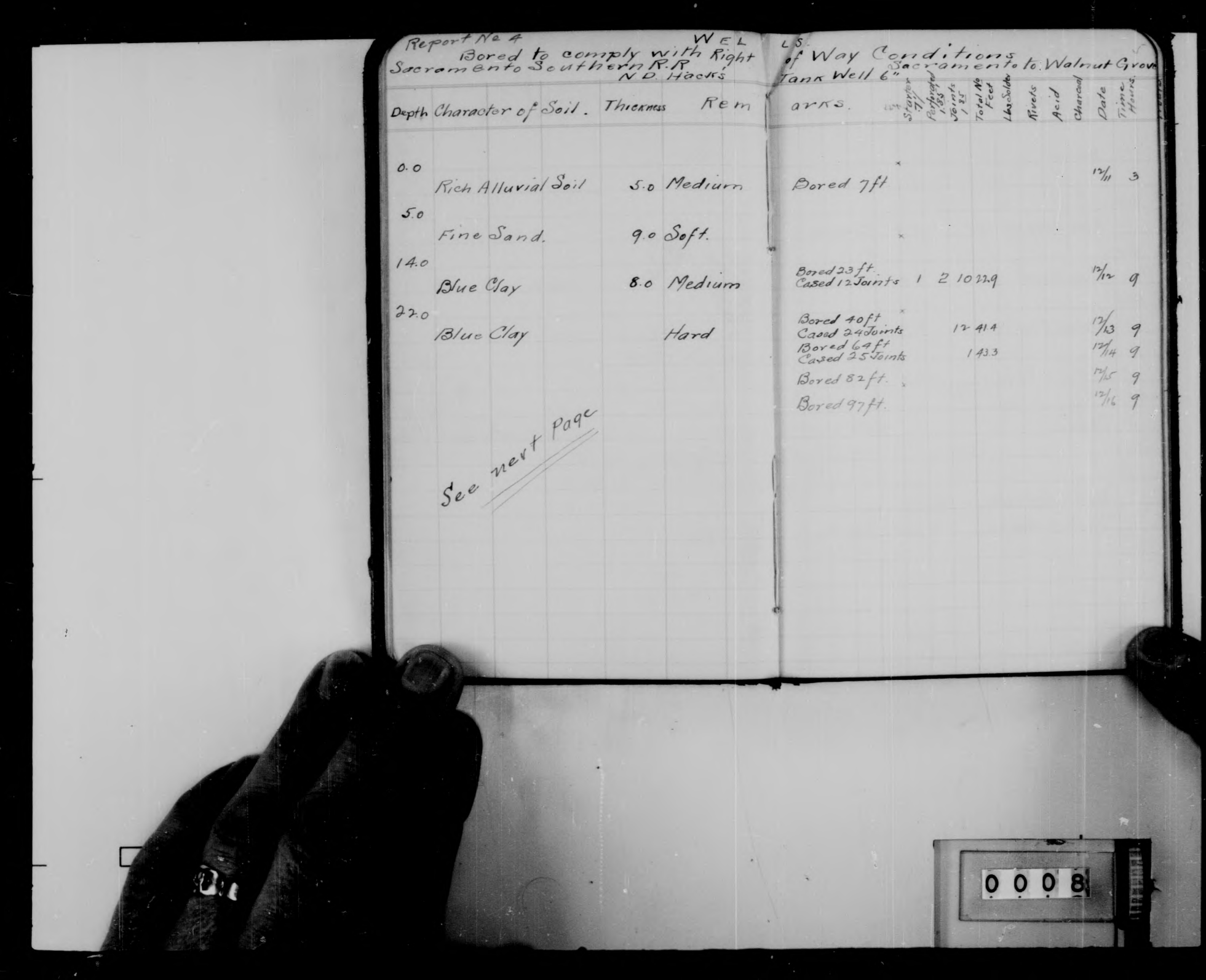
Bored to comply with Right of Way Conditions

Sacramento Southern R.R Sacramento to Walnut Grove

N.D. Hacks Tank Well 6"

Depth	Character of Soil.	Thickness	Remarks.	Starter	Perforated Joints	Joints	Total No Feet	Lbs Solder	Rivets	Acid	Charcoal	Date	Time Hours.
0.0	Rich Alluvial Soil	5.0	Medium									12/11	3
			Bored 7ft										
5.0	Fine Sand.	9.0	Soft.										
14.0	Blue Clay	8.0	Medium										
			Bored 23 ft. Cased 12 Joints	1	2	10	222.9					12/12	9
22.0	Blue Clay		Hard										
			Bored 40 ft Cased 24 Joints			12	414					12/13	9
			Bored 64 ft Cased 25 Joints			1	43.3					12/14	9
			Bored 82 ft.									12/15	9
			Bored 97 ft.									12/16	9

See next Page



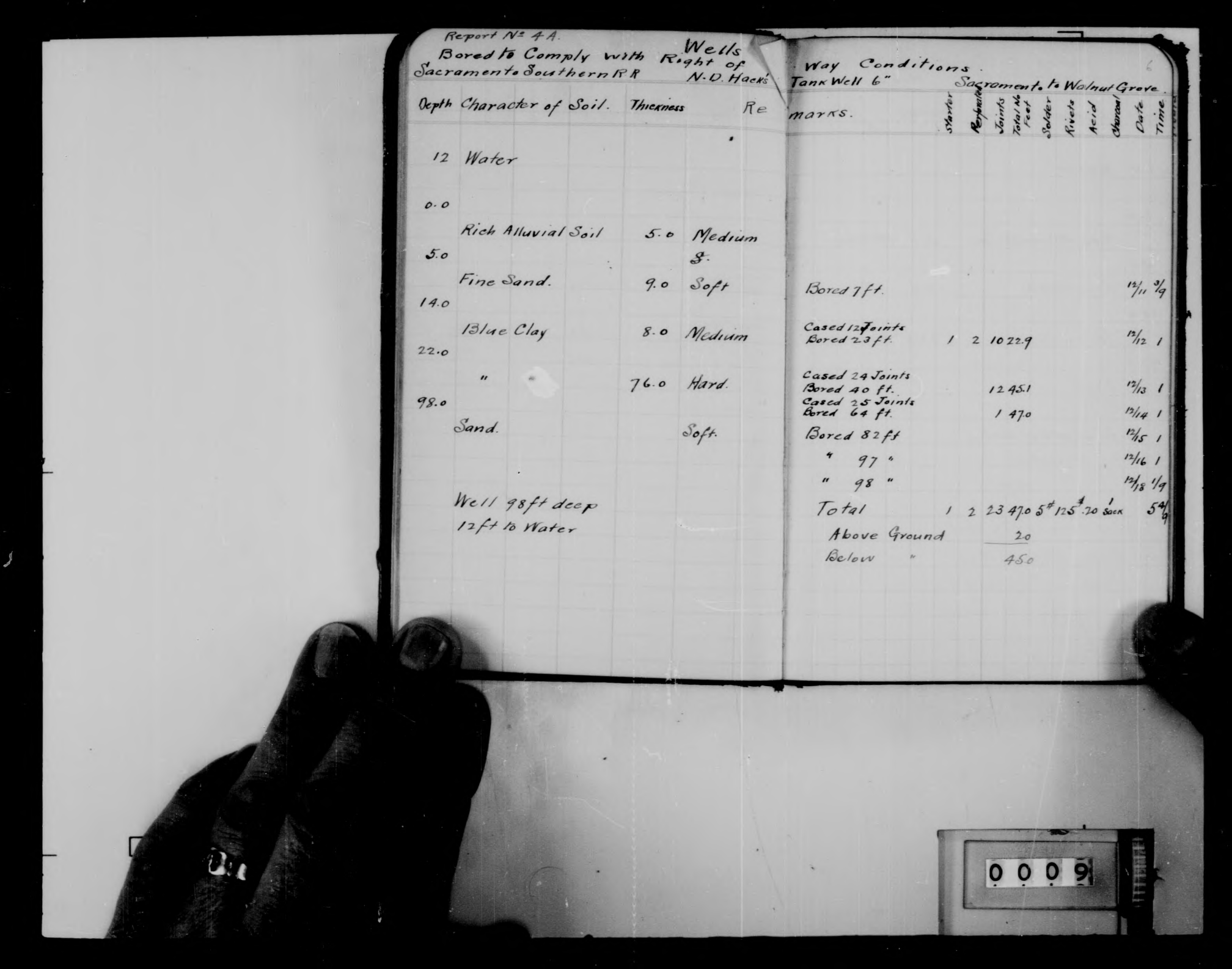
Report No 4A.

Wells

Bored to Comply with Right of Way Conditions.

Sacramento Southern R R N.D. Hack's Tank Well 6" Sacramento to Walnut Grove.

Depth	Character of Soil.	Thickness		Remarks.	Starter	Reamer	Joints	Total No Feet	Solder	Rivets	Acid	Charcoal	Date	Time
12	Water													
0.0														
	Rich Alluvial Soil	5.0	Medium											
5.0														
	Fine Sand.	9.0	Soft	Bored 7 ft.									12/11	3/9
14.0														
	Blue Clay	8.0	Medium	Cased 12 Joints Bored 23 ft.	1	2	10	22.9					12/12	1
22.0														
	"	76.0	Hard.	Cased 24 Joints Bored 40 ft.			12	45.1					12/13	1
98.0				Cased 25 Joints Bored 64 ft.			1	47.0					12/14	1
	Sand.		Soft.	Bored 82 ft									12/15	1
				" 97 "									12/16	1
				" 98 "									12/18	1/9
	Well 98 ft deep			Total	1	2	23	47.0	5#	125	.70	1 Sack		5 4/9
	12 ft to Water			Above Ground				2.0						
				Below "				45.0						



Report No. 5. WE
Bored to Comply with
Sacramento Southern R.R. Mrs. F. Myers

LLS.
Right of Way Conditions
5"
Sacramento to Walnut Grove

Depth.	Character of Soil.	Thickness	Re
12.0	Water		
0.0			
	Rich Alluvial Soil	3.0	Medium
3.0			
	Fine Sand.	12.0	"
15.0			
	Yellow Clay	22.0	Hard.
37.0			
	Sand.		

37 ft. Depth of Well
12 " to Water

1 Joint Bored Feby 5/06
Sent in as Report No 7
For Week Ending Feby 10/06

Marks.	Starters	Reamers	Joints	Total No Feet	Solder	Rivets	Acid	Charcoal	Date	Time
Bored 31 ft.									12/18	8/9
Cased 15 Joints Bored 37 ft.	1	2	13	285					12/19	6/9
Cased 2 Joints Bored 37 ft			2	32 2					12/20	7/9
Feby 5/06 Cased 1 Joint			1	34.0						
~~Totals~~	~~1~~	~~2~~	~~15~~	~~32.2~~	~~4~~	~~100~~	~~½ 20~~	~~1 Sack~~		~~2 3/9~~
~~Above Surface~~			~~1~~							
~~Below "~~			~~31.2~~							
Totals	1	2	16	340	4	100	½ 20	1 Sack		2 3/9
Above Surface			3.0							
Below "			31.0							

0010

Report No 6 & No 6A. Well Bored to Comply with Sacramento Southern R.R. A.F. Williams

Depth	Character of Soil	Thickness	Re
10.0	Water		
0.0			
	Rich Alluvial Soil	4.0	Medium
4.0			
	Yellow Clay.	62.0	Hard
66.0			
	Blue Clay	3.0	"
69.0			
	Fine Sand	1.5	Soft.
70.5			
	Blue Clay	52.5	Hard
123.0			

Depth of Well 123 ft.
" to water 10 ft.

Report to number and head for

S Right of Way Conditions Sacramento to Walnut Grove 8
5" Well.

Marks.	Starters	Perforated	Joints	Total No Feet.	Pounds Solder	Rivets	Acid	Charcoal	Date	Time Hours
Bored 20 ft.									12/22	5/9
Bored 5 ft.									12/23	1
" 68 "									12/24	1
" 82 "									12/26	1
" 105 "									12/27	1
" 110 "									12/28	2/9
" 123 "	17 Joints		15	322					1/3	1
	12 Joints		12	534					1/4	5/9
Total	1	2	27	534	3½	125	20	1 Sack		6-1/9
Above Surface				2						
Below "				51.4						

Week Ending

Report No 8 — Bored to comply with Sacramento Southern R.R. — Wells — Right of Way Conditions — Sac'to to Walnut Grove — 9

See page 7.— Mrs E.T. Merkeley's 8" Well — March 7th to April 9th 1906

Depth	Character of soil	Thickness	Remarks	Starters	Perforations	Joints	Total No. of feet	Solder pounds	Rivets	Acid	Charged	Date	Time — Hours
0.0'													
	Rich Alluvial soil	4'	Water.									3-1	10
4													
	Blue Clay mixed with fine sand.	32'										3-2 to 3-10	50
36'	Fine sand mixed with gravel.	46										3-11 to 3-17	45
82'												3-19 to 4-9	100
	Gravel.	18'											
100'				1	2	51	102	6 1/4	1/3 pkg	1 pint	2 1/2 lbs		

Total time 70 days.

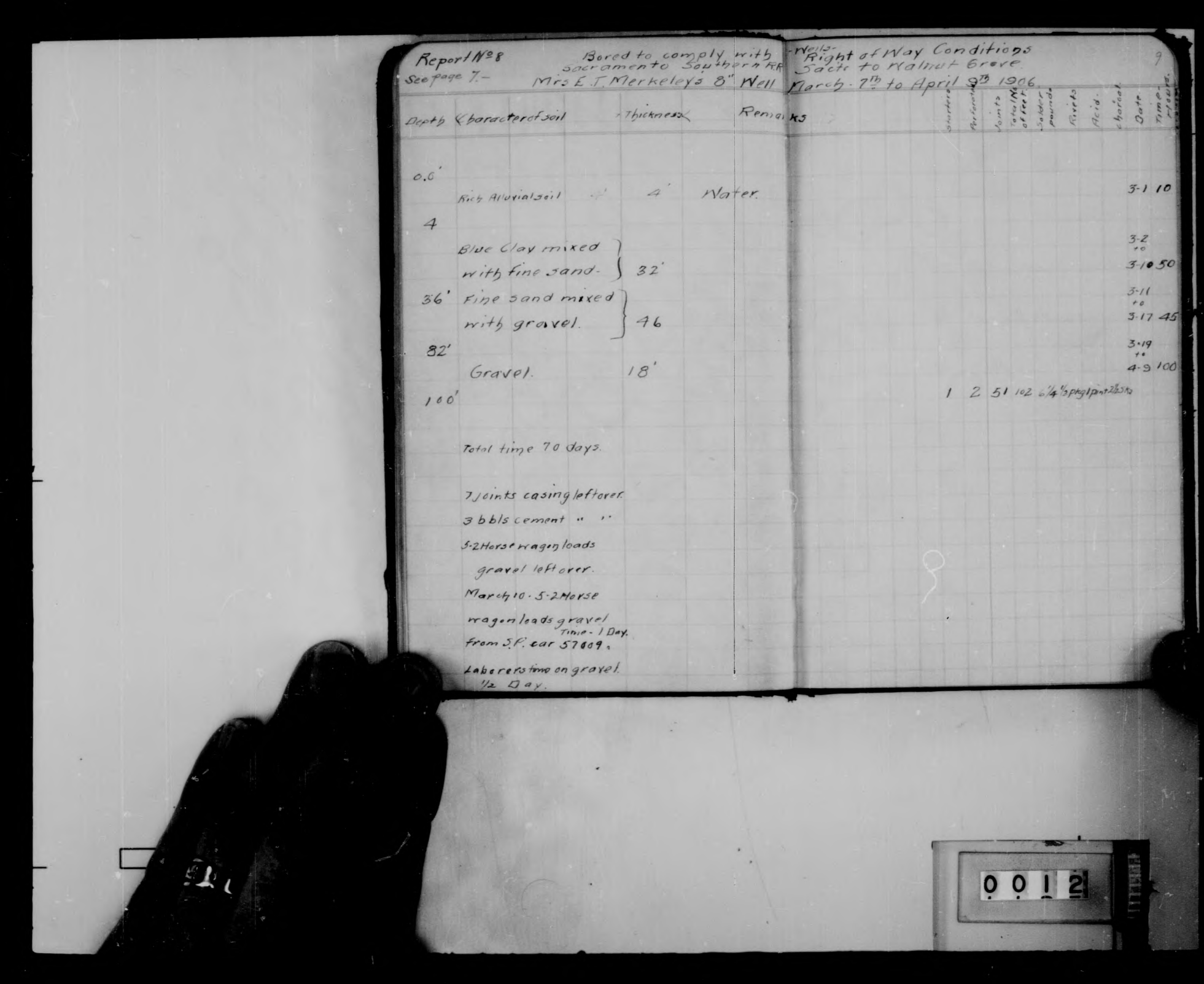
7 Joints casing left over.

3 bbls cement " "

5-2 Horse wagon loads gravel left over.

March 10 - 5-2 Horse wagon loads gravel
Time - 1 Day.
From S.F. car 57809.

Laborers time on gravel.
1/2 Day.

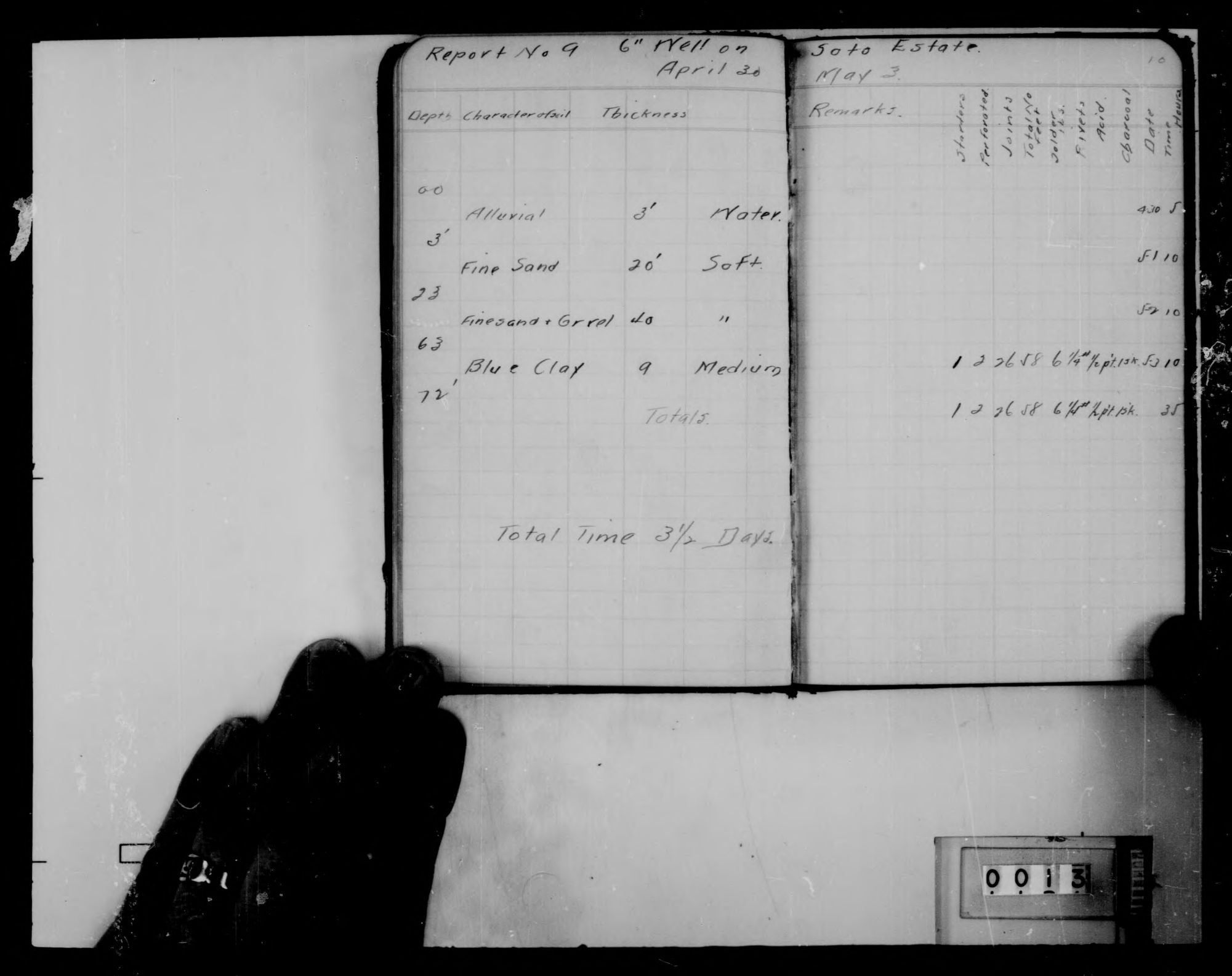


Report No 9 6" Well on April 30

Soto Estate.
May 3.

Depth	Character of soil	Thickness		Remarks.	Starters	Perforated	Joints	Total No feet	Solders	Rivets	Acid	Charcoal	Date	Time Hours
00														
	Alluvial	3'	Water.										430	5
3'														
	Fine Sand	20'	Soft.											1 10
23														
	Fine sand + Grvel	do	"											1 10
63														
	Blue Clay	9	Medium		1	2	76	58	6	1¼"	½ pt.	15k.		1 10
72'					1	2	76	58	6	1¼"	½ pt.	15k.		35
	Totals.													

Total Time 3½ Days.



Sacramento Southern R.R.
Material Report No 1
For Week Ending Dec. 9/07

Date	Name	Material
Dec. 8	M.T. Hunt	½ bbl Lime
" 8	" "	3 Pcs. Rough Redwood 2"x8"x14'
" 9	" "	20'-1½" Pipe.
" 9	" "	1½" Coupler.
" 8	J.H. Beach	1½ bbls Lime Gray.

0014